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Environmental Awareness Coalition of Southern Maryland

P.O. Box 758 • Hollywood, MD 20636-0758

November 7, 1994

Stephanie Dehnhard
Remedial Project Manager
EPA Region III

RE: Draft Focused Human Health Assessment
Southern Maryland Wood Treatment Site

Thank-you for the opportunity to review the "Revised Draft Focused Post-remedial Health Risk Assessment" for the Southern Maryland Wood Treatment Site. In addition to the EAC review of this assessment, our TAG advisor, Dr. Joel Hirschhorn has reviewed the draft and sent a report of his review to us. A copy of Dr Hirschhorn report is attached. Several items of are of significant concern to us.

The treatment of bioremediation as an effective remedial option throughout this "re-visiting of the original ROD" has been repeatedly and consistently questionable. While it is not my desire to enter the "continuing disagreement" between Dr Hirschhorn and Dr. Allen on the effectiveness and realistic representation of the treatability testing conducted by Dr. Allen, I do believe is imperative to state fact. During a March 16 meeting, Dr. Allen in responding to comments on the technique and quality of the bioremedeation treatability study he conducted, conceded that the design techniques and monitoring controls that would be used for a bioremedeation remedial process would be significantly different than what was employed during the treatability study. It was made very clear by Dr. Allen that the treatability test which revealed such low degradation rates were not indicative of what a full-scale accelerated bioremedeation effort would achieve. After review of treatability studies at other sites and by Dr. Allen's comments, it is evident that more sophisticated treatability techniques could have been used, resulting in a more realistic reflection of degradation rates. How can such questionable data be used to truly assess risk?

Incineration is viewed in terms of complete destruction of chemicals of concern, with complete disregard to the EPA's own data which shows incomplete destruction and subsequent release to the atmosphere of toxic chemicals. It is this documented concern of an incinerator's performance that prompted Community action years ago and direction by Senator Mikulski to the EPA to find an alternative.

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Dr. Hirschhorn's comments on the assessment of risk to our groundwater are of great interest. Of utmost importance throughout this process is the security of the area's water supply. We can accept nothing less than adherence to established clean water standards.

The noted concerns and weaknesses of this health assessment lead to a conclusion that contrary to honest and technically based assessment, the indicated results seem firmly biased not toward a fair and reasonable assessment of remedial options, but rather toward a pre-drawn conclusion.

Sincerely,

James Riedel

cc: Bob DeMarco, MDE
Ralph Guenther, Task Force
Bob Martin, EPA
Senator Mikulski

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REVIEW OF EPA'S "REVISED DRAFT FOCUSED POST-REMEDIAL HEALTH RISK ASSESSMENT" for the Southern Maryland Wood Treating Site

Joel S. Hirschhorn
EAC Technical Advisor

October 30, 1994

The issue of cleanup standards

The assessment is based on using two pick-up standards; that is, two concentration levels for CPAHs that determine what site material requires cleanup: 1 ppm for surface soil and 10 ppm for subsurface soil. However, the current official ROD for the site selected different cleanup standards based on protection of public health from carcinogenic compounds: 2.2 ppm for surface soils and 1 ppm for subsurface soils. The lower cleanup level for subsurface soils resulted from the goal of protecting groundwater. While, in practical terms, there is not a significant difference between 1 ppm and 2.2 ppm for surface soils, there is a significant difference between 1 ppm and 10 ppm for subsurface soils. Using the latter would result in much less material being excavated for containment or treatment, and would leave more CPAHs in the soil after cleanup, that might contaminate groundwater.

EPA should also explain why pyrene had been in the carcinogenic class for the longest time but now is not, and why carbazole is now considered carcinogenic when previously it was not. Were they mistakes or has EPA changed its categorization of these two PAHs? Some explanation is necessary.

Level of soil contamination

The risk assessment chose to use data from the composting treatability testing for the initial values of contaminants. It is highly unusual to accept such site contamination data without some serious examination of all available data. The issue is that if the data used are too low, than all risk estimates are too low. This issue is quite relevant, because there have been inconsistent data on site contamination. For example, the February 17, 1993 EPA START report on a treatability test for Southern Maryland site material has the same type of day 0 data used in the risk assessment. But the START data is some 57% greater than the composting treatability data used in the risk assessment. Similarly, in the incineration treatability data in Appendix D in the previous

draft FFS one of the untreated samples had a level of 2,446 ppm for CPAHs, compared to the figure of 747 ppm used in the risk assessment. Admittedly, many other data for the site have shown lower levels. In a most conservative (protective) risk assessment, however, maximum contaminant concentration values are used.

Another issue is that in the original RI work a distinction was made between surface and subsurface soil concentrations of contaminants. This was important because RI data showed, for example, a mean value of 4.3 ppm and a maximum value of 1,891 ppm for CPAHs in surface soil, and a mean value of 2.5 ppm and maximum value of 392 ppm in subsurface soils.

Groundwater

Interestingly, the post-remedial risk calculated for groundwater (Table 40) based on using the 10 ppm standard for the subsurface soils results in a risk higher than the normally used one of one in a million excess cancer deaths. In other words, to lower the risk by one order of magnitude to get to the usually used safe level, the subsurface concentration of CPAHs would have to be lowered one order to about 1 ppm, the standard in the ROD. Alternatively, EPA is legally free to use a high level of acceptable risk and stay with its 10 ppm figure. Also note that the non-carcinogenic hazard index value in Table 40 is greater for the groundwater threat than all other cases.

Also, the risk assessment's approach for groundwater appears to consider how soil contamination could result in a risk from using contaminated groundwater, without considering actual levels of contamination in groundwater at the site that may pose more serious threats than contaminants yet to move from soil to groundwater. However, I have not seen the EPA report mentioned in the draft risk assessment that served as the basis of this analysis.

Some of the values calculated for post-remedial groundwater contamination levels (Table 3) may seem low, but are actually higher than EPA's RCRA Groundwater Action levels. For example, the value for chrysene is five times higher than the cleanup standard, fluorene is nine times higher, and phenanthrene is nearly 20 times higher. Also, the value for pentachlorophenol is above EPA's MCL value for drinking water, normally used for Superfund cleanup standards. In other words, if protection of groundwater is a primary cleanup goal, then this analysis presents cause for concern.

Problems with analysis of remedial alternatives

There are critical shortcomings in the way several of the more important alternatives are treated. The main consequence is that there is an inaccurate portrayal of health risks that could bias the key remedial cleanup decisions and lead to a remedy

selection that does not offer the best protection for the community.

For Alternatives 3 and 4, onsite capping and containment, the entire analysis is based on two assumptions: (1) that there will be no development of the site forever, and (2) that the cap remains intact and fully effective in preventing any exposure to untreated toxic contaminants. Both assumptions are completely inconsistent with any worst case scenario based on the realistic concern that at some time there may be ineffective actions to maintain cap integrity and protectiveness, and that institutional controls may also fail, allowing residential development. If the first assumption should be violated and the second maintained, there is still a potential risk for trespassers, particularly children, who can access the land, which typically results because site fencing becomes ineffective. In fact, there is sound historical reasons for believing that both assumptions may not prevail.

Note that the federal government has no control or responsibility for maintaining the validity of both assumptions. State and local governmental units bear the legal and financial responsibility for enforcing long term needs. It should be obvious that by invoking the two assumptions a case is being built for using this Alternative, because its implementation costs are likely to be less than any treatment remedy. It should be understood that in the history of the Superfund program if cap and containment remedies were always considered to result in essentially complete risk reduction, then virtually no treatment remedies would have been selected. Moreover, it is critically important to note that these alternatives represent the lowest form of onsite land disposal, because both do not represent the use of the most modern lined hazardous waste landfill technology that is designed to offer much more protection than simple capping, especially protection for groundwater. Indeed, if protection of groundwater is a serious goal of remediation, then the cap and containment alternatives are inappropriate.

For Alternatives 6 and 7, incineration and thermal desorption, the key assumption is that all contaminants are effectively and safely destroyed, producing no residual contamination above the pick-up standards and hence no significant risk. In terms of risk reduction, these Alternatives look good, but not as good as Alternatives 3 and 4, which produce lower risk at much lower cost. Of course, both incineration and thermal desorption are not always implemented in a totally effective manner, leading to post-treatment residuals that may contain undestroyed toxic contaminants. For example, in the incineration treatability test results were reported that showed undestroyed CPAHs in five of the ten samples, including two with levels above 1 ppm (7.9 ppm and 166 ppm).

For Alternative 8, onsite bioremediation (composting), EPA has chosen once again to rely on the failed composting treatability test it had performed. I can only emphasize again that something terribly wrong was done in that test, leading to ridiculously poor rates of biodegradation. In fact, out of all the PAHs tested for only one (benz[a]anthracene) exhibited a significant decay in the 300 day test, signifying failure for

all the other contaminants. The poor results for one contaminant should not have been used as the basis for evaluating use of this technology. By doing so, EPA has ensured that residual contamination levels and post-remediation risks are unacceptable, particularly in relation to implementation costs. In fact, note that the residual post-remediation level of CPAHs for the 5 year treatment is over 54 ppm, which is greater than the original pick-up standards, justifying still more cleanup. Solid phase bioremediation should have been evaluated by using data from other sources, which have been discussed previously with EPA.

Similarly, for Alternative 9, use of a bio-slurry method, EPA has also ensured a negative result. In this case, no actual technical performance data from either treatability testing or the literature have been used. Instead, a recommendation by Harry Allen has been used, namely that only 95% of the contaminants would be destroyed. But leaving 5% inevitably leads to high residual concentration and risk levels. For example, use of this alternative, which would probably cost more than Alternative 8, would result in nearly as much residual CPAH as Alternative 8 (5 years). In fact, note that the residual post-remediation level of CPAHs is over 37 ppm, which is greater than the original pick-up standards, justifying still more cleanup. The case for achieving a higher performance rate than 95% is supported, for example, by data that showed 99.8% removal for carbazole, 99.1% for fluoranthene, 99.5% for naphthalene, and 99.5% for phenanthrene and anthracene, the only PAHs reported on, for an average reduction of 99.5%. [EPA, Engineering Bulletin Slurry Biodegration, September 1990.] If 99% is assumed, the post-remediation risk for this alternative is reduced significantly. If 99.5% is assumed, then the risk becomes the same as thermal desorption.

Conclusions

1. The risk assessment is inconsistent with the still legally binding cleanup standards in the ROD and is significantly less protective of human health with regard to groundwater contamination.

2. The risk assessment lays the foundation for selecting a cap and containment cleanup on the basis of both risk reduction and cost. If a cap and containment remedy was not selected, because of the Superfund remedy selection criteria and evaluation required, then the risk assessment results suggest a selection of either incineration or thermal desorption based on risk reduction and of thermal desorption when cost is accounted for.

3. The risk assessment was biased against both bioremediation alternatives, in one case using negative test results that should not have been used, and in the other using an arbitrary figure for treatment effectiveness without any testing or scientific justification.